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ABSTRACT

Economy of scale in rural schools and districts is associated with higher per pupil costs for educational programs and services of a quality comparable to nonrural schools. In 1990, Florida was one of 29 states that recognized higher per pupil costs associated with student population sparsity by providing additional revenues through its funding formula. Out of 67 school districts in the state, 37 received additional revenues to offset such costs. To ensure equity, Florida's Education Finance Program (FEFP) bases financial support to public schools on the number of students participating in a specific educational program, rather than the number of teacher units or classroom units. This paper summarizes a study examining the effects of additional revenue for student population sparsity on the equity of FEFP. The study divided the FEFP into four revenue sources: foundation program, supplements, discretionary levy from the local property tax, and categorical and special allocations. Measures of equity were applied to each element under two conditions (inclusion or exclusion of additional equity revenues). Findings showed that the sparsity supplement enhanced vertical equity for sparsely populated school districts and yielded a substantial gain in the state school finance system's fiscal neutrality. (80 endnotes) (MLH)

A STUDY OF THE EFFECTS OF THE SPARSITY SUPPLEMENT ON THE EQUITY OF THE FLORIDA EDUCATION FINANCE PROGRAM

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INTRODUCTION

Higher per pupil costs for educational programs and services are generally associated with the special characteristics of student populations, the type of program in which a student is enrolled, or legitimate differences based on the characteristics of schools and school districts. Higher per pupil costs require additional financial resources if comparable programs and services are to be maintained.[1] To maintain the equity of a state school finance system, schools and school districts may need to be compensated through their state funding formulas for the extra costs incurred.[2]

In a number of states, the special characteristics of schools and school districts have been taken into consideration in the design of the state school finance formula.[3] One of the special characteristics of schools and school districts that result in higher per pupil costs is attributed to the sparsity of the student population.[4] As a special characteristic of schools and districts, the sparsity of the student population is of particular concern in rural locales. Higher per pupil costs in rural schools and districts are the result of what has been termed the "sparsity and dispersion effect."[5] "Sparsely settled districts with a widely dispersed pupil population must operate small schools, especially small high schools, which have a high per student cost if appropriate educational programs are provided."[6]

Rural schools and districts incur higher per pupil costs due to limited enrollments, small teacher-pupil ratios, and higher utility and operational costs per pupil. Other sources of higher per pupil costs include superintendents and administrators whose salaries are divided among fewer students. Furthermore, higher salaries may be needed to recruit and retain teachers, particularly in curricular areas experiencing teacher shortages.[7]

RURAL SCHOOLS AND SCHOOL DISTRICTS

Rural schools and school districts are unique in that they experience differences in comparison to urban counterparts due to characteristics of the school or

district.[8] Contributing to these characteristics is the sparsity and dispersion of the student population. The sparsity and dispersion of the student population results in higher per pupil costs associated with providing educational programs and services of a scope and quality comparable to those in other locales.

Of the approximately 85,000 public elementary and secondary schools in the United States, 51 percent are situated in locales that are classified as rural and small town. There are 15.2 million students attending schools in rural and small town locales, representing 40 percent of the total public school student population of the nation. Twenty-eight states have more than one-half of the public school students attending school outside a Standard Metropolitan Statistical Area.[9]

Economy of scale in rural schools and districts is associated with higher per pupil costs for educational programs and services of a quality comparable to schools in non-rural locales. The economy of scale particular to rural schools and districts has its basis in the sparsity and dispersion of the student population.[10]

ECONOMY OF SCALE

"Economies of scale exist when larger organizations are able to produce the same outcomes as smaller organizations for less cost."[11] Monk identified two sources of diseconomy of scale and the resulting higher costs for smaller schools and school districts.

> These economies of scale are generally traced to two sources. The first involves the difficulties small organizations encounter when they seek to purchase small amounts of relatively indivisible inputs. The result may be a tendency for small organizations to purchase more of the indivisible inputs than is optimal in terms of efficiency. An example drawn from education would involve an instance where a school district is forced to operate with smaller class sizes than it would prefer to offer. To the extent that student performance is not enhanced by small class size, there is a sense in which the teacher resource, because of its indivisible nature, is being underutilized. This underutilization of certain inputs can erode the efficiency of the affected organization and the net result can be a situation where in small organizations it costs more than in larger organizations to achieve the same result.[12]

A second source had to do with teacher specialization.

> A second source of scale economies involves the gain in specialization that can accompany increases in scale. Consider a situation where there are 30 students and 1 teacher in one school district and 240 students and 8 teachers in a second school district. Assume further that in both districts the teachers are all paid the same. The pupil-teacher ratio is 30:1 in both cases, but in the latter case each teacher will be able to specialize to a degree that is impossible (or difficult to achieve) in the first instance. To the degree that this specialization is associated with pupil gains, the second district will be producing more than the first for the same cost. Looked at in a different way, this result suggests that the smaller district can produce the same outcomes as the larger district only if it incurs additional costs.[13]

The concept of economy of scale is based on production models. Production models in education consist of inputs, outcomes, and the process that transforms inputs to outcomes. The inputs in the educational production model are multiple and can generally be divided into student inputs and school inputs. Examples of student inputs are the characteristics and attributes each brings to school such as ability, self-esteem, family background influences, and peer relationships. Whereas school inputs are resources such as personnel, buildings, and materials.[14] School inputs can be quantified by calculating the costs for the purchase of these resources. However, quantification of student inputs is a much more difficult matter. Furthermore, just as the production model in education has multiple inputs, it also has multiple outcomes. These outcomes are both economic and noneconomic, private and public. They represent the benefits of education to both society and the individual.[15] The third element of the education production function model pertains to the process that transforms inputs to outcomes. The elements of this transformation are the combination of the various inputs. The transformation itself is the result of the interaction of the various inputs.[16]

The issue in the discussion of the education production functions, school size, and economy of scale is the cost of producing educational outcomes as the size of the student membership of a school or district varies. Production efficiency is enhanced when more outcomes can be produced relative to the cost of doing so.[17] The costs associated with economy of scale in education are the costs

of school inputs such as personnel, buildings, instructional materials, transportation, and other fixed costs.

Economy of scale can be illustrated by a U-shaped cost curve. That is, costs per student for a given level of educational outcome decreases as the size of the student membership of a school or district increases up to a point of maximum efficiency where costs per student are lowest. Beyond that point, costs per student increase once again.[18] Beyond an optimal level of enrollment, costs per student increase as the number of students in a school or school district increase. "As schools diverge from this optimal size they will face increasing costs without increases in the educational output for each student."[19] This is explained by the observation that the school organization cannot be administered as efficiently due to the need for additional resource inputs per student to achieve the same educational outcome as those school organizations of an optimal size.

If rural schools and school districts are to offer educational programs and services similar in quality and scope to those offered in non-rural locales, higher per pupil costs are inescapable.[20] Because of the higher costs of providing for an equalized educational opportunity in rural schools and districts, there is a greater educational need as measured by higher educational costs.

The goal of education finance known as equity permits an unequal distribution of educational resources based on the principle of vertical equity. In this study, the unequal distribution of educational resources is associated with the additional revenues allocated by the state school finance formula for sparsity of the student population. Vertical equity is similar to the principle of distributive justice.[21] Inequities in the distribution of educational resources are permitted if they work to the benefit of the disadvantaged. In other words, legitimate differences among the educational needs of students permit an unequal distribution of educational resources to maintain an equal educational opportunity for those students. It is upon these grounds that additional revenues for sparsity has its philosophical justification.

THE FLORIDA EDUCATION FINANCE PROGRAM

During the 1989-90 school year, the public schools of Florida had the fourth largest student membership in the United States. Only California, Texas, and New York had larger memberships in their public schools.[22] Florida had almost two million students in its elementary and secondary schools.[23]

In 1990, Florida was one of twenty-nine states that recognized higher per pupil costs associated with the

sparsity of student populations by providing additional revenues through its school finance funding formula.[24] Of the sixty-seven school districts in the state, thirty-seven received additional revenues to compensate for higher per pupil costs resulting from diseconomies of scale in sparsely populated school districts.[25]

The responsibility for the establishment, maintenance, and operation of the public schools in Florida is set forth in the education article of the state constitution. The Constitution of the State of Florida specifies a "uniform system of free public schools."[26] In 1973, the legislature enacted the state's most recent school finance system, the Florida Education Finance Program (FEFP), to fund the public school districts of the state.[27] The intent of the legislature is

> to guarantee to each student in the Florida public school system the availability of programs and services appropriate to his educational needs which are substantially equal to those available to any similar student notwithstanding geographic differences and varying local economic factors.[28]

"To provide for the equalization of educational opportunity" the funding formula of the FEFP recognized "(1) varying local property tax bases, (2) varying program cost factors, (3) district cost differentials, and (4) differences in per student cost for equivalent education programs due to sparsity and dispersion of student population."[29]

The FEFP based financial support for the public schools upon the number of students participating in a specific educational program rather than the number of teacher units or the number of classroom units. Revenue allocations were calculated by multiplying the number of "full-time equivalent" students (FTE) in each educational program by the "cost factor" of that program to obtain a "weighted full-time equivalent" (WFTE). Weighted FTE's were multiplied by a "base student allocation" (BSA) to determine the foundation portion of the FEFP.[30] Program cost factors were determined by the legislature and represented the relative cost differences among the thirty-five categories of educational programs.[31] Supplemental allocations, the discretionary local levy, categorical and special allocations, and capital outlay allocations comprised the balance of the FEFP.

For the 1988-89 school year, the school districts of Florida received 53.2 percent of their financial support from state sources; 40.4 percent of their support was from local sources (i.e., property taxes). The remaining 6.4 percent was from federal sources.[32] Federal sources were

not included in the calculation of the FEFP nor in this study.

State support for school districts in Florida was provided by legislative appropriation to fund the foundation portion of the FEFP, supplements, categorical and special allocations, and capital outlay. Local revenue for the support of the public schools was derived almost entirely from property taxes in each of the sixty-seven school districts. Federal revenues were appropriated by Congress and supported specific programs such as school lunch, adult education, and education of the handicapped.[33]

The data set for this study was the FEFP calculation for the fiscal year 1989-90. The total FEFP calculation for 1989-90 was approximately $7.223 billion.[34] The total did not include capital outlay and debt service. There were 1.95 million full-time equivalent (FTE) students. The number of weighted full-time equivalent (WFTE) students was 2.37 million.[35] The number of public elementary and secondary schools was 2,432.[36]

CALCULATION OF THE FEFP

Full-time equivalent (FTE) students were calculated in accordance with Florida Statutes.[37] The calculation was based on a number of program membership surveys conducted during the fiscal year. Surveys of each school were conducted and the full-time equivalent student membership was aggregated by school and district. The Florida Department of Education established the number and intervals of membership surveys.[38]

The FTE calculation was multiplied by program cost factors. Program cost factors were determined in the annual General Appropriations Act of the Legislature.[39] These factors served to assure that each of the thirty-five programs received an equitable share of educational funds in relation to relative costs. Costs are reported annually by the districts. The legislature adopted a three year average in the computation of program cost factors. The cost per FTE of each program was used to construct an index of relative program costs. The cost per FTE of the Basic Program, Grades 4-8 established a base of 1.000.[40] FTE for a program was multiplied by the cost factor and the result was weighted full-time equivalents (WFTE).

The base student allocation (BSA) was determined by the legislature and established in the General Appropriations Act.[41] The BSA for the 1989-90 fiscal year was $2,538.26. The BSA was multiplied by the student's WFTE and represented the allocation per WFTE. This was the foundation program that set a base level of funding necessary for a minimum education offering. It was the primary source of FEFP revenues for school districts.

The product of BSA x WFTE was multiplied by the district cost differential (DCD). The DCD was computed based upon an average of the three previous years of the Florida Price Level Index prepared by the Office of the Governor and represented the cost of living in each district.[42] The DCD was used to adjust each school district's FEFP allocation. The 1989 legislature provided that each district with a value below 1.0000 on the index would be set at 1.0000 in determining the FEFP allocation.[43] Nine school districts had values above 1.0000 on the index and qualified for additional revenues.[44]

A declining enrollment supplement was added to the FEFP allocation of eligible districts. Eligibility for the supplement was determined by comparing the prior year FTE with that of the current year (1989-90). In districts where there was a decline in enrollment, 50 percent of the decline was multiplied by the prior year's calculated FEFP allocation per FTE and added to the district's current year allocation. The calculated FEFP allocation, for purposes of the supplement, was computed by multiplying the WFTE by the BSA and then by the DCD.[45] Five school districts received a declining enrollment supplement.[46]

The FEFP contained a profoundly handicapped adjustment to provide additional revenues to eligible school districts whose prior year expenditure per FTE for profoundly handicapped programs exceeded that year's FEFP allocation for profoundly handicapped by at least 125 percent. Total revenue available for the adjustment was set by the legislature at $4,584,390. If the sum of the eligible districts' adjustment exceeded that figure, each district's allocation would be prorated. Twelve districts qualified for the adjustment.[47]

A further adjustment was added to the FEFP allocation was the sparsity supplement. The formula was designed to recognize the relatively higher costs of a smaller school district through a statutory formula in which the variable was a sparsity index.[48] The index was computed by dividing the FTE of the district by the number of approved high school centers (not to exceed three). Eligibility was limited to districts with 17,000 or fewer FTE. Each eligible district's supplement was adjusted for the relative wealth of the district. The supplement was limited to $12,500,000 statewide. If the sum of the eligible districts' supplement exceeded that amount, the supplement would be prorated among eligible districts. Thirty-seven school districts received the supplement.[49]

The quality assurance guarantee was added to the FEFP allocation.[50] The legislature appropriated $25,000,000 to guarantee each district a 7.068 percent per WFTE increase in funds. The calculation of the increase was made by comparing the FEFP allocation plus revenues per WFTE from

the discretionary tax for 1989 90 with the FEFP allocation plus total potential revenues per WFTE from the discretionary tax for 1989-90 excluding the declining enrollment supplement, prior year adjustments, and extended day allocation. If the appropriated amount was not sufficient to provide a 7.068 percent increase, each district's allocation would be prorated. Twelve school districts were eligible for allocation.[51]

The 1989 legislature added the rapid growth supplement to the FEFP calculation to address the needs of districts in the event the growth in the number of FTE exceeded the state average from the previous year. The percentage by which each district's enrollment growth exceeded the statewide average was multiplied by the district's 1989-90 FTE. The resulting product was used to proportionally distribute $10,000,000. Seventeen districts were eligible.[52]

The sum of the previous calculations was the total state and local FEFP dollars ($6.3 billion) for the foundation program and supplements. Subtracted from this amount was the required local effort (RLE) of $2.3 billion. The RLE was the amount of revenue from ad valorem taxes each school district was required to contribute to participate in the FEFP. The legislature prescribed the aggregate RLE. The RLE was calculated in the following manner. The Department of Revenue certified to the Commissioner of Education the most recent estimate of the nonexempt assessed valuation of property for school purposes in each school district. The commissioner computed a millage rate that, when applied to 95 percent of the state total of nonexempt assessed valuation of property for school purposes generated the aggregate prescribed RLE for all districts. The aggregate RLE was $2,289,434,494.[53] The average statewide millage rate set by the legislature for the 1989-90 fiscal year was 5.792 mills. Each district's share of the aggregate RLE was adjusted by a factor designed to equalize the required local effort.[54] The adjustment was computed by multiplying the equalization factor for the prior year's assessment roll for each district by 95 percent of the nonexempt assessed valuation for school purposes shown on the tax roll, and by the prior year's RLE millage exclusive of any equalization adjustment. The amount computed was the additional RLE for equalization purposes during the 1989-90 fiscal year.

The equalization factor was computed as the quotient of the prior year's assessment level of the state as a whole divided by the prior year's assessment level for each school district, from which 1 was subtracted. The amount of additional RLE for equalization for each district was converted to a millage rate, based on 95 percent of current

year's nonexempt assessed valuation for the district, and added to the statewide average RLE millage rate.

In addition to the required millage levy, the RLE included an amount for fees for adult students who were not exempt from payment.[55] Additionally, an adjustment to the RLE was made for districts that had contractual agreements with federal correctional institutions. These agreements were for the instruction of inmates and had the effect of reducing the base student allocation for inmate educational services to $1,584 per FTE.[56]

The amount that resulted from the calculation of the RLE was subtracted from the total FEFP allocation. That which remained was the state's share of the FEFP, $4,000,810,691.[57] This amount was subject to adjustments for the prior year. Adjustments included funds allocated to a district for adjudication of litigation, arithmetical errors, assessment roll changes, FTE membership errors, or errors revealed in audit reports. The amount that resulted was adjusted state FEFP dollars.

To adjusted state dollars was added the extended day supplement.[58] The legislature appropriated $113,894,074 for an extended day or a seven period day. A district's share was based on FTE count and prorated. All school districts received revenues for an extended day or seven period day.[59]

An adequacy supplement was added to the adjusted state FEFP. The supplement was appropriated to provide an 8 percent increase in funding per WFTE. The increase was based on total state and local FEFP, discretionary local levy, and major formula based categorical programs such as K-3 Improvement, Safe Schools, Writing Skills, and Instructional Materials. The supplement, $5,845,001, was prorated among the nineteen eligible districts.[60]

Up to 10 percent of funds remaining in the FEFP allocation were appropriated as the caps adjustment supplement.[61] This supplement was allocated after all components of the FEFP had been calculated and funded. The funds were used to supplement WFTE that were over program group ceilings. Eighteen school districts qualified for the supplement.[62] With the addition of the extended day supplement, the adequacy supplement, and the caps adjustment to adjusted state FEFP dollars, the revised total was the net state FEFP allocation. The foregoing supplements (district cost differential, declining enrollment, profoundly handicapped, sparsity, quality assurance, rapid growth, extended day, adequacy, and caps adjustment) were a second source of FEFP revenues for school districts.

The third source of FEFP revenue for current year operations was the discretionary tax.[63] The revenues from this source totaled $282 million. There were two types of discretionary tax: current operations and capital outlay

and maintenance. The discretionary tax for current operations permitted each school district to levy a non-voted millage rate on the nonexempt assessed valuation of property in the district. The maximum rate set by the legislature was 0.719 mills. Districts were permitted to levy a discretionary tax up to that rate. The tax rate for capital outlay and maintenance was set at 2.0 mills, but was not included in this study.

Categorical special allocations represented a fourth source of FEFP revenues for school districts. The revenue from this source totaled $651 million. Categorical program funds were added to the net state FEFP allocation. The categorical programs were appropriated to assist in the development and maintenance of activities that indirectly supported FEFP programs.[64] The programs were Comprehensive School Construction and Debt Service, Community Schools, School Lunch, Instructional Materials, Library Media Materials, Student Transportation, Student Development Services, Diagnostic and Learning Resource Centers, and Comprehensive Health Education.

Special allocations included all other sources of state funds for school districts. The funds were not classified by statute as FEFP or categorical program funds. Special allocations were for programs such as Dropout Prevention, High Cost Science Labs, Merit Schools, School Bus Replacement, Summer Camps, and Teachers as Advisors.[65]

There were five FEFP calculations throughout the 1989-90 fiscal year. The first calculation was completed in June, following the legislative session. The second in July upon receipt of the certified tax roll from the Department of Revenue. The third and fourth were in November and February, respectively, after receipt of school district membership surveys. The final calculation was made following the school district's June membership survey.[66]

THE SPARSITY SUPPLEMENT

The sparsity supplement was enacted into law and incorporated into the FEFP in 1975.[67] It was based on research that indicated

> the cost per student in sparsely settled areas and in small districts is greater for equivalent programs and services than in larger and more densely settled districts. Large school districts have economies of scale not possible in small population districts. Sparsely settled districts with a widely dispersed pupil population must operate small schools, especially high schools, which have a high per student cost

if appropriate educational programs are provided.[68]

The intent of the Florida legislature, when it enacted the FEFP, was to provide equal educational opportunity by a guarantee of "substantially equal" programs and services "notwithstanding geographic differences."[69] To accomplish that intent, the legislature approved a supplement for differences in per student costs for equivalent educational programs and services due to the sparsity and dispersion of the student population.[70] The formula for the calculation of the sparsity supplement was based on the research of Roe L. Johns of the University of Florida.[71]

Johns specified four criteria for selecting the most appropriate measure of the sparsity of the student population. First, the measure should be computed annually because of changes in the student population from year to year and be based on reliable data already collected. Second, the measure should be related to the size and scatter of the student population and the area of the school district. Third, the measure should have a high correlation with the additional revenues needed to provide equivalent educational programs in sparsely populated districts. Fourth, the measure should be simple.[72]

The measure of sparsity selected was the number of FTE in all programs divided by the number of approved high school centers, not to exceed three. The measure met Johns' criteria. First, the number of FTE was computed annually in order to administer the FEFP. Second, the measure of sparsity (FTE divided by the number of approved high school center not to exceed three) was related to the size criteria because it correlated with the total FTE of the district. The measure related to the scatter and area criteria because of the number of approved high school centers required. More than three high school centers indicated a district more densely populated. Third, the measure of sparsity was easy to compute.[73]

As to the criteria that the measure should have a high correlation to the additional revenues necessary to provide equivalent educational programs in sparsely populated districts, Johns selected teacher units. This measure was used to estimate the cost for additional teachers necessary to offer the scope of courses in sparsely populated school districts that, on average, were offered in school districts having a desirable economy of scale. An equation was developed to describe the relationship between extra costs for additional teachers and the measure of sparsity. It was termed the "sparsity factor" and placed into statute together with the procedure for determining the sparsity supplement.[74]

Statute prescribed the following formula to compute the sparsity supplement:

$$\frac{1101.8918}{2700 + \text{district sparsity index}} - 0.1101$$

Districts that had a sparsity index of 1,000 or less were computed as having an index of 1,000. Districts that had a sparsity index of 7,308 and above were computed as having an index of zero and were not eligible for the supplement.

The district sparsity index was computed by dividing the total number of FTE in a district by the number of high school centers, not to exceed three. The centers had to be approved in a survey conducted by the Florida Department of Education. The sparsity index was entered into the formula to complete the calculation of the sparsity factor. The unadjusted sparsity supplement was the product of the sparsity factor multiplied by the base student allocation and funded WFTE.

A "wealth adjustment" was calculated and applied to the unadjusted sparsity supplement. It was computed by calculating the funds per FTE that would be generated by a district's levying the maximum discretionary tax levy. That value was then compared to the funds per WFTE that would be generated statewide by the maximum discretionary millage rate (0.719 mills) on the assessed valuation of all nonexempt property. Districts that exceeded the statewide value had their unadjusted sparsity supplement reduced by an amount that was calculated by multiplying the difference between the district and state maximum discretionary funds per WFTE by the district's FTE count minus 1.

In 1989-90, the statewide adjusted sparsity supplement totaled $43,835,849. However, the legislature failed to appropriate the revenues to fully fund the supplement. The appropriation amounted to $12,500,000 and was prorated among the thirty-seven eligible districts.[75]

RESEARCH DESIGN

The study examined the effects of additional revenues for the sparsity of the student population on the equity of the Florida Education Finance Program (FEFP). In the design of the study, the FEFP was divided into the four elements that represented distinct sources of revenue for school districts. As each element was added to the FEFP, it had the potential effect of altering the equity of the system. That is, the variation in the distribution of revenues could increase or decrease depending on the effect of each element when included in the calculation. The result could be a system that was more equitable or less equitable due to the influence of the various elements. The research was designed to determine the influence of the various elements of the funding formula on the equity of the system. Additionally, revenues for sparsity were included in each element to determine the effect as if those revenues were

part of that element. Thu the overall design would (1) establish the equity of the FEFP and the influence of each element and (2) determine the effects of additional revenues for sparsity on the equity of the FEFP and each of the elements.

Although each state's school funding system is distinctive, the primary element of most state school finance systems is some form of foundation aid designed to equalize educational revenue among the students of a state in order to provide a minimum equal educational opportunity.[76] Additionally, finance systems include supplements based on school district characteristics that affect the cost of educational programs and services. Supplements are based on such variables as experience of personnel, cost differentials, high cost programs, school district size, and rapid growth or decline.[77] Another source of revenue in state school finance systems is the property tax. Property taxes represented local school districts' efforts in support of the educational enterprise.[78] A final element is categorical aid. Categorical aid is allocated for specific educational purposes to further some particular legislative intent. Unlike foundation aid that can be used for any legitimate educational purpose, categorical aid is used only for specified purposes.[79]

Accordingly, the FEFP was divided into the four elements that were sources of revenues for school districts: (1) foundation program, (2) supplements, (3) discretionary levy from the local property tax, and (4) categorical and special allocations. Measures of equity were applied to each element under two conditions. Under the first condition, additional revenues for sparsity were not included. Under the second condition, revenues for sparsity were included.

ELEMENTS OF THE FEFP

The foundation program was designed to provide all students of the state's public schools an equal minimum educational offering. Revenues for the foundation program were calculated as the product of the number of weighted full-time equivalent students in each district multiplied by the base student allocation (BSA) of $2538.26. The product ($6.046 billion) was divided by the number of weighted full-time equivalent (WFTE) students in each district to determine the revenues per pupil per district from the foundation program.

Supplements to the foundation program comprised the second element of the FEFP. Supplements were the district cost differential, declining enrollment allocation, quality assurance guarantee, profoundly handicapped allocation, rapid growth supplement, adequacy supplement, and extended

day supplement. The supplements had a value of $250 million. A district's supplements were added to district revenues from the foundation program and divided by WFTE. The calculation was performed for all districts and resulted in revenues per pupil per district from the foundation program and supplements.

The third element was the revenue that districts generated from the discretionary tax levy of 0.719 mills. Revenues from the discretionary levy were calculated as the product of the maximum discretionary millage rate multiplied by the assessed valuation of nonexempt property in each school district. The levy had a statewide value of $252 million. The district levy was added to each district's revenues from the foundation program and supplements and divided by the number of WFTE in the district. The calculation was performed for all districts and resulted in revenues per pupil per district from the foundation program, supplements, and discretionary levy.

The fourth element in the FEFP that provided revenues for school districts was categorical and special allocations ($650 million). Categorical and special allocations for each school district were added to the district's revenues for the foundation program, supplements, and discretionary levy and divided by the number of WFTE in the district. The calculation was performed for all districts and resulted in revenues per pupil per district from the foundation program, supplements, discretionary levy, and categorical and special allocations. The calculation represented all sources of revenues from the FEFP with the exception of capital outlay.

For purposes of the study, the analysis was based on a fully funded sparsity supplement. The value of the maximum discretionary levy in all districts was used in the calculations.

DATA ANALYSIS

In the analysis, the four elements of the FEFP that represented distinct sources of revenue for school districts are referred to as levels. Level A represented the foundation program. Level B represented the foundation program plus supplements. Level C represented Level B plus revenues from the levy of the maximum discretionary millage on the assessed valuation of non-exempt property. Level D represented Level C plus categorical and special allocations and was the total FEFP revenues exclusive of capital outlay. All sixty-seven school districts were included in each level of the calculation.

Mean

The values derived from the calculation of the mean are displayed in Table 1. Under the condition of no sparsity the value of the mean at Level A was $2538.26 per pupil per district. The value of the mean increased at Level B ($2634.48), Level C ($2729.84), and Level D ($3044.19). The overall increase in the values of the mean among the levels indicated the effect as supplement, discretionary levy, and categorical and special allocations were considered.

When additional revenues for sparsity were included in the calculation of the mean, the revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the mean at Level A was $2676.18 and increased at Level B ($2761.40), Level C ($2867.76), and Level D ($3182.10). The increase in revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Range

The values derived from the calculation of the range are displayed in Table 1. Under the condition of no sparsity, the value of the range at Level A ($0.00) indicated no variation in the distribution of revenues per pupil per district. Under this condition, a value of zero at Level A was expected. The foundation program (Level A) provided an equal distribution of revenues for all students of the state. As a result, there was no variation in the distribution of revenues. However, the value of the range increased at Level B ($241.21), Level C ($578.66), and Level D ($591.87). The overall increase in the variation of the range among the levels indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the four levels examined.

When additional revenues for sparsity were included in the calculation of the range, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the range at Level A was $476.43 and increased at Level B ($630.09), Level C ($730.28), and Level D ($799.83). The increase in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Restricted Range

The values derived from the calculation of the restricted range are displayed in Table 1. Under the condition of no sparsity, the value of the restricted range at Level A ($0.00) indicated no variation in the

distribution of revenues per pupil per district. Under this condition, a value of zero at Level A was expected. The foundation program provided all students with equal revenues. The value of the restricted range increased at Level B ($156.06), Level C ($330.56), and Level D ($346.75). The overall increase in the variation of the restricted range among the levels indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the restricted range, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the restricted range at Level A was $454.46 and increased at Level B ($547.34), declined at Level C ($544.70), and increased at Level D ($614.03). The overall increase in variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Federal Range Ratio

The values derived from the calculation of the federal range ratio are displayed in Table 1. Under the condition of no sparsity, the value of the federal range ratio at Level A (0.00) indicated no variation in the distribution of revenues per pupil per district. Under this condition, a value of zero at Level A was expected since the foundation program provided equal revenues to all students of the state. The value of the federal range ratio increased at Level B (0.0605) and Level C (0.1258). At Level D, the ratio decreased (0.1179). The overall increase in the variation of the federal range ratio among the levels indicated a disequalizing effect as supplements, discretionary levy, and the categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the federal range ratio, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the ratio at Level A was 0.1790 and increased at Level B (0.2122), decreased at Level C (0.2047), and Level D (0.2085). The increase in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Variance

The values derived from the calculation of the variance are displayed in Table 1. Under the condition of no sparsity, the value of the variance at Level A (00.00) indicated no variation in the distribution of revenues per pupil per district. Under this condition, a value of zero at Level A was expected by reason of the fact that the foundation program provided an equal distribution of revenues for all students in the state. The value of the variance increased at Levels B (2703.59) and C (12285.53). The value of the variance decreased at Level D (11052.25). The overall increase in the value of the variance across the levels indicated a disequalizing effect as supplements, discretionary levy, and the categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the variance, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the variance at Level A was 26774.96, increased at Level B (32382.68), decreased slightly at Level C (32063.85), and increased at Level D (38031.01). The increase in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Standard Deviation

The values derived from the calculation of the standard deviation are displayed in Table 1. Under the condition of no sparsity, the value of the standard deviation at Level A (00.00) indicated no variation in the distribution of revenues per pupil per district. Under this condition, a value of zero was expected by reason of the fact that the foundation program provided an equal distribution of revenues to all students of the state. The value of the standard deviation increased at Level B ($52.00) and Level C ($110.84), and decreased at Level D ($105.13). The overall increase in the variation of the standard deviation among the levels indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the standard deviation, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the standard deviation at Level A was $163.63 and increased at Level B

($179.95), decreased at Level C ($179.06), and increased at Level D ($195.02). The increase in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

Coefficient of Variation

The values derived from the calculation of the coefficient of variation are displayed in Table 1. Under the condition of no sparsity, the value of the coefficient at Level A (0.0000) indicated no variation in the distribution of revenues per pupil per district. Under this condition, a value of zero at Level A was expected by reason of the fact that the foundation program provided an equal distribution of revenues for all students of the state. However, the value of the coefficient increased at Level B (0.0198) and Level C (0.0406), and decreased at Level D (0.0345). The overall increase in the value of the coefficient of variation among the levels, though small, indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the coefficient of variation, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the coefficient at Level A was 0.0611, increased at Level B (0.0652), decreased at Level C (0.0624), and at Level D (0.0613). The overall increase in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for sparsity.

McLoone Index

The values derived from the calculation of the McLoone Index are displayed in Table 1. Under the condition of no sparsity, the value of the index was 1.00 at Level A and indicated the sum of revenues necessary to bring all districts below the median level of revenues per pupil to the median level of revenues per pupil was zero. An index of 1.00 at Level A was expected by reason of the fact that there was no variation in the distribution of revenues per pupil per district at the median or below under the foundation program. The index had a value of 0.99 at Level B and Level C. The value decreased at Level D to 0.98. The overall decrease in the value of the index, though small, indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result

of an increasing variation in the distribution of revenues per pupil per district below the median.

When additional revenues for sparsity were included in the calculation of the McLoone Index, the variation in revenues per pupil per district among the levels increased. Under the condition of sparsity, the value of the index was 0.98 at Level A and decreased at Level B (0.96), Level C (0.95) and Level D (0.95). The decrease in the value index under the condition of sparsity, though small, was the effect of additional revenues for sparsity.

Gini Coefficient

The values derived from the calculation of the Gini coefficient are displayed in Table 1. Under the condition of no sparsity, the value of the Gini coefficient at Level A (0.000) indicated no variation in a specified percentage of students receiving the same percentage of total revenues. Under this condition, a value of zero was expected by reason of the fact that the foundation program provided an equal distribution of revenues for all students of the state. The value of the coefficient increased at Level B (0.011), Level C (0.013), and declined slightly at Level D (0.006). The overall increase in the value of the Gini coefficient among the levels, though small, indicated a disequalizing effect as supplements, discretionary levy, and categorical and special allocations were considered. The disequalizing effect was the result of an increasing variation in the distribution of percentage of revenues per percentage of pupils.

When additional revenues for sparsity were included in the calculation of the Gini coefficient, the value of the coefficient among the levels decreased, except for Level A where the value of the coefficient was 0.007. The value at Level B was 0.010, decreased at Level C (0.007), and at Level D (0.001). The overall decrease in the variation of the distribution of percentage of revenues per percentage of pupils under this condition was the effect of additional revenues for sparsity.

Correlation Coefficient

The values derived from the calculation of the correlation coefficient are displayed in Table 1. Under the condition of no sparsity, the value of the correlation coefficient at Level A (0.00) indicated no relationship between the independent variable (wealth per pupil per district) and the dependent variable (revenues per pupil per district). Under this condition a value of zero at Level A was expected by reason of the fact that the foundation program provided an equal distribution of revenues for all students of the state regardless of the wealth of the school districts. At Level B, the value of the correlation increased (+0.57) and indicated a moderate

relationship between the two variables. At Level C, the value of the coefficient increased again (+0.92) and indicated a strong relationship between wealth per pupil per district and revenues per pupil per district. At Level D, the value of the correlation decreased to +0.82. The overall increase in the values of the correlation coefficient among the levels was the effect of the relationship between wealth per pupil per district and revenues per pupil per district as supplements, discretionary levy, and categorical and special allocations were considered. The effect was the result of a positive correlation between wealth and revenues per pupil per district among the levels examined.

When additional revenues for sparsity were included in the calculation of the correlation coefficient, the overall strength of the relationship between wealth and revenues per pupil per district decreased. The exception was Level A where the value of the correlation was -0.42. However, the values of the coefficient at Level B, Level C, and Level D were -0.21, +0.19, and +0.09, respectively. The effect of additional revenues for sparsity was a decrease in the magnitude of the relationship between wealth per pupil per district and revenues per pupil per district among the levels examined. When all revenues were included in the calculation, the overall effect of the sparsity supplement was consistent with a system that was more fiscally neutral than it would have been without the sparsity supplement.

Coefficient of Determination and Residuals

The values derived from the calculation of the coefficient of determination (variance explained) are displayed in Table 1. Under the condition of no sparsity, the value of the coefficient of determination at Level A (0.00) indicated no variance to be explained by the relationship between the independent variable (wealth per pupil per district) and the dependent variable (revenues per pupil per district). Under this condition, a value of zero at Level A was expected by reason of the fact that the foundation program provided an equal distribution of revenues per pupil per district without regard to wealth per pupil per district. There was no residual value to explain because of the absence of any variation in the dependent variable (revenues) explained by its relationship to the independent variable (wealth).

However, the value of the coefficient increased at Level B (0.32), Level C (0.85), and decreased at Level D (0.67). The overall increase in the values of the coefficient indicated an effect on the percentage of the variation in the distribution of revenues per pupil per district explained by its relationship to wealth per pupil per district as supplements, discretionary levy, and

categorical and special allocations were considered. The effect was the result of an increasing variation in the distribution of revenues per pupil per district explained by wealth per pupil per district. The values of residuals were 0.68 at Level B, 0.15 at Level C, and 0.33 at Level D. The values of the residuals indicated the percentage of variation in the distribution of revenues per pupil per district that could not be explained by the wealth per pupil per district.

When additional revenues for sparsity were included in the calculation of the coefficient of determination, the percentage of variance in the distribution of revenues per pupil per district explained by the relationship to wealth per pupil per district decreased. The exception was Level A where the value of the coefficient was 0.17. The value of the coefficient decreased at Level B (0.05), Level C (0.04), and Level D (0.01). The decrease in the percentage of variation in the distribution of revenues per pupil per district explained by the relationship to wealth per pupil per district was the effect of additional revenues for sparsity.

The values of the residuals increased when additional revenues for sparsity were included in the calculation The values of the residuals were 0.83 at Level A, 0.95 at Level B, 0.96 at Level C, and 0.99 at Level D. The increase in the values of the residuals was the effect of additional revenues for sparsity.

Slope of the Regression Line

The values derived from the calculation of the slope of the regression line are displayed in Table 1. Under the condition of no sparsity, the value of the slope at Level A (0.00) indicated no change in revenues per pupil per district when wealth (assessed valuation) per pupil per district changed 1 unit ($1.00 per pupil per district). Under this condition, a value of zero at Level A was expected by reason of the fact that the foundation program provided an equal distribution of revenues per pupil per district without regard to wealth per pupil per district. At Level B, the value of the slope was +0.29 which indicted that revenues per pupil per district increased by $0.29 for each $1.00 increase in wealth per pupil per district. At Level C, the value of the slope increased to +1.01. At Level D the value decreased to +0.85. The overall increase in the values of the slope among the four levels indicated the effect on the distribution of revenues per pupil per district when wealth per pupil per district changed $1.00 as supplements, discretionary levy, and categorical and special allocations were considered. The effect was the result of an increasing variation in the distribution of revenues per pupil per district as wealth per pupil per district changed by $1.00.

When additional revenues for sparsity were included in the calculation of the slope, the overall variation in the distribution of revenues per pupil per district decreased as wealth per pupil per district changed by $1.00. The overall effect was to moderate the values of the slope when compared to the condition of no sparsity. Under the condition of sparsity, the value of the slope at Level A changed from zero to -0.67 and indicated a -$0.67 change in revenues per pupil per district as wealth per pupil per district changed by $1.00. The value at Level B moderated somewhat to -0.38. However, at Level C the direction and value of the slope changed to +0.34. At Level D the value of the slope was +0.18 compared with +0.85 under the condition of no sparsity. Under this condition, the overall decrease in the variation of the distribution of revenues per pupil per district as wealth per pupil per district changed by $1.00 was the effect of additional revenues for sparsity.

SUMMARY OF DATA ANALYSIS

Measures of Equity

Measures of equity were applied to the four levels of the FEFP that represented sources of revenue for school districts. Calculations were performed under two conditions: no sparsity and sparsity. When additional revenues for sparsity were included in the calculation of the range, restricted range, and federal range ratio, mean, variance, standard deviation, and coefficient of variation, the variation in the distribution of revenues per pupil per district increased. The increase in variation was the effect of additional revenues for sparsity.

When additional revenues for sparsity were included in the calculation of the McLoone index, the variation in the distribution of revenues per pupil per district below the median increased. The increase in variation was the effect of additional revenues for sparsity. However, when additional revenues for sparsity were included in the calculation of the Gini coefficient, the variation in the percentage of revenues per percentage of pupils decreased. The decrease in the variation was the effect of additional revenues for sparsity.

Measures of Fiscal Neutrality

Measures of fiscal neutrality were applied to the four levels of the FEFP that represented sources of revenue for school districts. Calculations were performed under two conditions: no sparsity and sparsity. When additional revenues for sparsity were included in the calculation of the correlation coefficient, the relationship between

Table 1: Summary of Values

	Level A	Level B	Level C	Level D
Mean				
No Sparsity	2538.26	2634.48	2729.84	3044.19
Sparsity	2676.18	2761.40	2867.76	3182.10
Range				
No Sparsity	000.00	241.21	578.66	591.87
Sparsity	476.43	630.09	730.28	799.83
Restricted Range				
No Sparsity	000.00	156.06	330.56	346.75
Sparsity	454.46	547.34	544.70	614.03
Federal Range Ratio				
No Sparsity	0.0000	0.0605	0.1258	0.1179
Sparsity	0.1790	0.2122	0.2047	0.2085
Variance				
No Sparsity	00000.00	2703.59	12285.53	11052.25
Sparsity	26774.96	32382.68	32063.85	38031.01
Standard Deviation				
No Sparsity	000.00	51.99	110.84	105.13
Sparsity	163.63	179.95	179.06	195.01
Coefficient of Variation				
No Sparsity	0.0000	0.0198	0.0406	0.0345
Sparsity	0.0611	0.0651	0.0624	0.0612
McLoone Index				
No Sparsity	1.00	0.99	0.99	0.98
Sparsity	0.98	0.96	0.95	0.95
Gini Coefficient				
No Sparsity	0.000	0.011	0.013	0.006
Sparsity	0.007	0.010	0.007	0.001
Correlation Coefficient				
No Sparsity	0.00	+0.57	+0.92	+0.82
Sparsity	-0.42	-0.21	+0.19	+0.09
Coefficient of Determination				
No Sparsity	0.00	0.32	0.85	0.67
Sparsity	0.17	0.05	0.04	0.01
Slope				
No Sparsity	0.00	+0.29	+0.92	+0.85
Sparsity	-0.67	-0.38	+0.34	+0.18

wealth per pupil per district and revenues per pupil per district decreased. The decrease in the relationship was the effect of additional revenues for sparsity.

When additional revenues for sparsity were included in the calculation of the coefficient of determination, the

variation in the distribution of revenues per pupil per district explained by its relationship to wealth per pupil per district decreased. The decrease in variance explaine was the effect of additional revenues for sparsity. The values of the residuals increased when additional revenues for sparsity were included in the calculation. The increase was the effect of additional revenues for sparsity.

When additional revenues for sparsity were included in the calculation of the slope of the regression line, the variation in the distribution of revenues per pupil per district decreased as wealth per pupil per district changed by 1 unit. The decrease was the effect of additional revenues for sparsity.

CONCLUSIONS

The first calculation of the equity of Florida's school finance system indicated that there was a disequalizing effect due to supplements (Level B), discretionary levy (Level C), and categorical and special allocations (Level D). That is, the variation in revenue per pupil per district increased across each of these levels. The disequalizing effect was most pronounced when revenue from the discretionary levy (Level C) was included in the calculations. The magnitude of the effect was associated with the uneven distribution of property wealth among the districts of the state and the resulting disparate amount of revenue the levy of discretionary millage generated among school districts. Furthermore, the greater the property wealth of a district, the greater its share of educational revenues such that supplements, the discretionary levy, and categorical and special allocations favored districts with greater property wealth.

The second calculation of the equity of the FEFP indicated the effects of the sparsity supplement. Two significant conclusions were drawn from examination of those data. First, the sparsity supplement had the effect of increasing the revenue per pupil per district among eligible districts. That is, the sparsity supplement achieved its intended effect of providing additional revenue to those districts experiencing higher per pupil costs due to the sparsity of the student population. Second, the sparsity supplement had the effect of substantially reducing the relationship between the wealth of a school district and the revenues per pupil. Thus, the supplement had an effect that resulted in a state school finance system more consistent with the principle of fiscal neutrality.

It can be argued that the sparsity supplement had a disequalizing effect by reason of the fact that it provided

more revenue per pupil to districts characterized by sparsity of student population than districts lacking the characteristic of sparsity. However, under the principle of vertical equity, school districts that have legitimate special characteristics demonstrate greater educational need based on the cost of providing an equal educational opportunity should be afforded additional revenue with which to provide that educational opportunity. That is the essence of the principle of vertical equity. In the present study, not only did the sparsity supplement enhance vertical equity for sparsely populated school districts in Florida, it also resulted in a substantial gain in the fiscal neutrality of the state school finance system.

PUBLIC POLICY IMPLICATIONS

The study of the financing of public education is concerned with equity in the distribution of revenues, adequacy of revenues to achieve the goals of schooling, and efficiency in the use of those revenues. Research efforts in the field of education finance have primarily been directed to the concern for equity in the distribution of educational revenues among the public school districts of the various states. Equity is necessarily of primary concern. Whether the level of revenue appropriated for education is or is not adequate or whether those revenues are used efficiently to achieve to goals of schooling, the equitable distribution of revenues must precede the consideration of both adequacy and efficiency. At a minimum, the goal of equal educational opportunity requires an equitable distribution of available resources. However, adequacy and efficiency represent equal components of equal educational opportunity. From the standpoint of education finance, the success of financing the educational enterprise pivots not only on equity but also on adequacy and efficiency. In the present study, neither adequacy of revenues for rural schools and districts nor the efficient use of revenue were addressed. While continuing to conduct research on equity in the distribution of educational revenue for rural schools and districts, issues of adequacy and efficiency represent equally important research agendas for further studies in the field of education finance.

A further implication of this research points to the tension between horizontal and vertical equity, within the domain of education finance research and that of public policy development and implementation. The education finance principles of horizontal equity and vertical equity appear to be in conflict with each other. On the one hand, the principle of horizontal equity holds for an equal distribution of educational revenue. On the other hand, vertical equity holds for a greater share of educational

revenue for certain students, schools, and school districts to compensate for legitimate disadvantages in educational opportunities visited upon them by circumstances not of their own making. Under the Rawlsian scheme of social justice, inequities are permissible only if they work to the benefit of the disadvantaged.[80] The theory of social justice supports the principle of vertical equity. In the instance of the present study, social justice served as a philosophical basis for providing additional revenues for sparsity to rural schools and districts so they would have access to an equalized educational opportunities. However, such a practice is of little comfort to those who perceive an encroachment on individual sovereignty when their economic advantages are used to support the economically disadvantaged. Nor is the theory of social justice and the principle of vertical equity of much comfort to the disadvantaged when they lack the political influence to alter their economic circumstances.

The benefits to society of an educated citizenry have been well-documented and are intuitively obvious. That education contributes substantially to the common good of the nation should be beyond serious challenge. There can be little doubt that American schooling has been a vehicle for economic enfranchisement and is the primary means by which society can equalize opportunities among those born into different circumstance. The extent to which the educational benefits of the social contract are equitably distributed will indicate the level of commitment to the common good. The availability of educational opportunities that are substantially equal, regardless of locale, will require there to be a tension between the principles of horizontal and vertical equity in the financing of the public school system.

Ultimately, the tension between horizontal and vertical equity in the financing of public education is a matter for the development of public policy that satisfies the promise of an equal educational opportunity for all children.

Notes

1. Robert Berne and Leanna Stiefel, The Measurement of Equity in School Finance (Baltimore: Johns Hopkins University Press, 1984), 14-16.

2. Walter I. Garms, James W. Guthrie, and Lawrence Pierce, School Finance: The Economics and Politics of Public Education, 2d ed. (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1988), 147.

3. Deborah A. Verstegen, School Finance at a Glance (Denver, Colo.: Education Commission of the States, 1990), 18.

4. Ibid., 18-22.

5. Roe L. Johns, "An Index of Extra Costs of Education Due to Sparsity of Population," Journal of Education Finance 1 (Fall 1975): 159-204.

6. Ibid., 159.

7. Johns, 159-204; William F. Fox, "Reviewing Economies of Size in Education," Journal of Education Finance 6 (Winter 1981): 273-96; Richard G. Salmon, "State School Finance Programs and Their Influence on Rural Schools and School Districts," Journal of Education Finance 16 (Fall 1990): 130-48; Deborah A. Verstegen, "Efficiency and Economies-of-Scale Revisited: Implications for Financing Rural School Districts," Journal of Education Finance 16 (Fall 1990): 159-79; Gerald R. Bass, "Isolation/Sparsity," Journal of Education Finance 16 (Fall 1990): 180-91; Austin D. Swanson and Richard A. King, School Finance: Its Economics and Politics (New York: Longman Publishing Group, 1991), 179.

8. Berne and Stiefel, 15.

9. Frank H. Johnson, Assigning Type of Locale Codes to the 1987-88 CCD Public School Universe (Washington, D.C.: National Center for Education Statistics, 1989).

10. See, e.g., David S. Honeyman, David C. Thompson, and R. Craig Wood, Financing Rural and Small Schools (Charleston, W.V.: ERIC Clearinghouse on Rural Education and Small Schools, 1989); Robert J. Tholkes and Charles H. Sederberg, "Economies of Scale and Rural Schools," Research in Rural Education 7 (Fall 1990): 9-15; David H. Monk, Potential Effects of the Overburden Argument on Funding of Rural Schools (Albany, N.Y.: New York State Executive Office, 1981) and Educational Finance an Economic Approach (New York: Macmillan, 1990); L. Dean Webb, Martha M. McCarthy, and Stephen B. Thomas, Financing Elementary and Secondary Education (Columbus O.: Merrill, 1986); Gerald R. Bass, "Isolation/Sparsity," Journal of Education Finance 16 (Fall 1990): 180-91.

11. Monk, Potential Effects of Overburden, 4.

12. Ibid, 4-5.

13. Ibid.

14. Ibid, 323.

15. Theodore W. Schultz, The Economic Value of Education (New York: Columbia University Press, 1963); Burton A. Weisbrod, External Benefits of Public Eduction (Princeton, N.J.: Industrial Relations Section, Department of Economics, Princeton University, 1964); Charles S. Benson, The Economics of Public Education, 3d ed.(Boston: Houghton Mifflin, 1978); Roe L. Johns, Edgar L. Morphet, and Kern Alexander, The Economics and Financing of Education, 4th ed.(Englewood Cliffs, N.J.: Prentice-Hall, 1983); Thomas H. Jones, Introduction to School Finance (New York: Macmillan Publishing Company, 1985); Webb, McCarthy, and Thomas, Financing Elementary and Secondary Education; Monk, Educational Finance: An Economic Approach; Elchanon Cohn and Terry Geske, The Economics of Education (New York: Pergamon Press, 1990); Austin Swanson and Richard King, School Finance: Its Economics and Politics (New York: Longman, 1991).15.

16. Monk, Educational Finance, 325.

17. Ibid., 8-10.

18. Webb, McCarthy, and Thomas, 63.

19. Ibid., 185.

20. Gerald R. Bass, "Isolation/Sparsity," 180.

21. John Rawls, A Theory of Justice (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1971), 12.

22. National Center for Educational Statistics, Digest of Education Statistics 1990 (Washington, D.C.: U.S. Department of Education, 1991).

23. 1989-90 Florida Education Finance Program Final Calculation (Tallahassee, Fla.: Florida Department of Education, 1990).

24. Verstegen, School Finance at a Glance, 19-22.

25. 1989-90 Final Calculation, 8-9.

26. Fla. Const. of 1968, art. IX, sec. 1. "System of Public Schools. Adequate provision shall be made by law for a uniform system of free public schools and for the establishment, maintenance, and operation of institutions of higher learning and other public education programs that the needs of the people may require."

27. Roe. L. Johns, The Evolution of the Equalization of Educational Opportunity in Florida 1929 to 1976 (Gainesville, Fla.: Institute for Educational Finance, University of Florida, 1976); 1989-90 FEFP, 1.

28. Fla. Stat. 236.012(1).

29. 1989-90 FEFP, 1.

30. Ibid.

31. Fla. Stat. 236.081(1)(c).

32. 1989-90 FEFP, 1.

33. 1989-90 FEFP, 1-3.

34. 1989-90 Final Calculation.

35. 1989-90 Final Calculation.

36. Digest of Education Statistics.

37. Fla. Stat. 236.013(2).

38. Fla. Stat. 236.081(1)(a).

39. Fla. Stat. 231.081(1)(c).

40. 1989-90 FEFP, 10.

41. Fla. Stat. 236.081(1)(b).

42. Fla. Stat. 236.081(2).

43. 1989-90 FEFP, 13.

44. The districts were Broward, Collier, Dade, Manatee, Martin, Monroe, Orange, Palm Beach, and Sarasota.

45. 1989-90 FEFP, 13; Fla. Stat. 236.081(7).

46. 1989-90 Final Calculation; the districts were Bradford, Gadsden, Gulf, Holmes, and Walton.

47. 1989-90 FEFP, 14; Fla. Stat. 236.081(9). The eligible districts were Brevard, Broward, Charlotte, Dade, Flagler, Franklin, Martin, Palm Beach, Pasco, St. Lucie, Seminole, and Volusia.

48. Fla. Stat. 236.081(6).

49. 1989-90 FEFP; the eligible districts were Baker, Bradford, Calhoun, Charlotte, Citrus, DeSoto, Dixie, Flagler, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Highlands, Holmes, Jackson, Jefferson, Lafayette, Levy, Liberty, Madison, Monroe, Nassau, Okeechobee, Putnam, St. Johns, Santa Rosa, Seminole, Sumter, Suwannee, Taylor, Wakulla, Walton, and Washington.

50. Fla. Stat. 236..081(12).

51. 1989-90 FEFP, 15; the districts were Broward, Charlotte, Collier, Dade, Flagler, Indian River, Lee, Martin, Orange, Palm Beach, Sarasota, and Seminole.

52. 1989-90 FEFP, 15; the districts were Brevard, Broward, Charlotte, Collier, Dade, Flagler, Hernando, Lake, Liberty, Martin, Orange, Osceola, Palm Beach, St. Johns, St. Lucie, Seminole, and Taylor.

53. Fla. Stat. 236.081(4)(a); 1989-90 Final Calculation.

54. Fla. Stat. 236.081(4)(b).

55. Fla. Stat. 236.081(e).

56. 1989-90 FEFP, 17.

57. 1989-90 Final Calculation.

58. Fla. Stat. 236.081(10).

59. 1989-90 FEFP, 17.

60. 1989-90 FEFP, 18; the districts were Broward, DeSoto, Dixie, Flagler, Franklin, Gilchrist, Glades, Gulf, Hendry, Lake, Levy, Liberty, Manatee, Martin, Nassau, Pasco, Sarasota, Volusia, and Wakulla.

61. Fla. Stat. 236.081(11).

62. 1989-90 FEFP, 18; the districts were Alachua, Bradford, Charlotte, Dixie, Escambia, Flagler, Gulf, Hardee, Jackson, Lafayette, Lee, Madison, Manatee, Orange, Santa Rosa, Suwanee, Union, and Washington.

63. Fla. Stat. 236.25.

64. Fla. Stat. 236.081(5).

65. 1989-90 FEFP, 19-20.

66. 1989-90 FEFP, 21.

67. Johns, "An Index of Extra Costs," 159-204.

68. Ibid., 160.

69. Fla. Stat. 236.012(1).

70. Johns, "An Index of Extra Costs," 160.

71. Ibid.

72. Ibid., 168-69.

73. Ibid., 169-70.

74. Fla. Stat. 236.081(6).

75. 1989-90 Final Calculation.

76. Webb, McCarthy and Thomas, 190-91.

77. Ibid., 160-67.

78. Guthrie, Garms, and Pierce, 112-126; Swanson and King, 97-120.

79. Garms, Guthrie, and Pierce, 150-51; Swanson and King, 150-51.

80. Rawls. A Theory of Social Justice.